ASSESSING THE CONSTRUCT VALIDITY OF THE SITUATIONAL TEST OF EMOTIONAL MANAGEMENT

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ASSESING THE CONSTRUCT VALIDITY OF

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ABSTRACT

The current study examined the construct validity of the Situational Test of Emotional Management (STEM), a newly developed measure of emotional intelligence. A logistic regression approach was utilized to assess the STEM, at the item-level, on two factors, gender and Extraversion. It was hypothesized a logistic model including gender and Extraversion would significantly predict classification of participants into two groups (correct response on STEM items and incorrect response on STEM items) beyond a simple intercept-only logistic regression. Data analysis revealed that the gender and Extraversion did not significantly enhance the classification rates of participants into the two groups, but gender was a significant univariate influence on four items. Explanations as to why the hypothesis was not fully supported are discussed, as well as avenues for future research.

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INTRODUCTION

Since its inception, emotional intelligence (EI) has attracted both criticism and acclaim from academics. Critics have voiced concerns regarding content, construct, and criterion-related validity. There are many different definitions of emotional intelligence in the literature, which raises concerns about the integrity of the construct (Bar-On, 2006; Boyatzis, Goleman, & Rhee, 2000; Mayer & Salovey, 1997). Further, many of the EI measures that do exist suffer from apparent measurement problems, since they do not consistently correlate with other measures as expected (e.g. other EI measures, personality, and cognitive ability). Some also argue that EI overlaps too strongly with personality, and not enough with cognitive ability, to be considered a measure of intelligence (Conte, 2005; Dawda & Hart, 2000; Derksen, Kramir, & Katzko, 2002; Grubb & McDaniel, 2007; Joseph & Newman, 2010; Matthews, Zeidner, & Roberts, 2002; Newsome, Day, & Catano, 2000; Van Rooy, Viswesvaran, & Pluta, 2005). For some, these concerns have been enough to abandon the concept and label it as a zeitgeist or cultural trend that does not warrant the attention of academics (Briner & Rousseau, 2011).

However, it remains to be seen whether these concerns are enough to discard emotional intelligence completely. It could be that the available measures of EI can be improved, which would clarify the nature of the factor and solidify its validity. Thus, measurement refinement and development is critical for the progression of EI. Much of the

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criticism is aimed at once conceptualization of emotional intelligence, the mixed model approach, while the other predominant approach, the ability approach, does not suffer from these limitations to the same extent. For instance, evidence suggests the MSCEIT, the predominant ability measure, is useful in predicting relevant work outcomes such as job performance, and therefore could be a useful tool for organizations when making selection and promotional decisions (Brackett, Mayer, & Warner, 2004; Lopes, Grewal, Kadis, Gall, & Salovey, 2006; Matthews, Emo, Roberts, & Zeidner, 2006) .

This paper addresses the aforementioned issues in detail by first delineating the evolution of emotional intelligence and then by describing the literature behind the two prominent conceptualizations. Finally, the current study will assess the impact of specific independent variables (gender and Extraversion) on item-level scores on the Situational Test of Emotional Management (STEM), a recently developed measure of EI (MacCann & Roberts, 2008). Results and implications of the study will be discussed.

The Evolution of EI: From Science to Pop Culture

Interest in emotional intelligence (EI) has increased in popularity in both practice and academia over the past two decades, since Salovey and Mayer's (1990) seminal work. This article organized the literature on intelligence and emotion-related skills to construct a multifaceted definition of emotional intelligence. They described EI as "a set of skills that contribute to the accurate appraisal and expression of emotion in oneself and in others, the effective regulation of emotion in self and others, and the use of feelings to motivate, plan, and achieve in one's life" (Salovey & Mayer, 1990, p. 185). Based on this definition, Mayer,

DiPaolo, and Salovey (1990) explored the first theoretical facet of EI: the accurate appraisal of emotions. From an evolutionary perspective, individuals' perceptual system developed the ability to recognize emotions in others based on facial expression. Being able to recognize emotions such as anger, fear, and happiness is an essential ability for humans to develop to survive as a species. Individuals who excel in this ability may be well-adjusted in emotional and social functioning. Mayer and colleagues postulated that the ability to perceive emotions extends beyond facial expressions and includes novel stimuli such as colors and designs. Further, those who excel in the accurate appraisal of emotions in facial expression would also be able to accurately identify the emotional content in novel stimuli. The data suggested that the presence of discernable emotional qualities resident in facial expressions and novel stimuli in the environment could be detected differentially across individuals. Further, skill in emotional perception also positively correlated with demonstrated empathy and Extraversion. The work of Mayer and colleagues provided evidence for a new skill set based on emotional perception and management that could be useful in a variety of life situations. Furthermore, these findings led the previously accepted notion that emotions were useless, irrational stimuli that interfered with reasoning and decision-making to be seriously questioned in the psychological literature (Mayer, Salovey, & Caruso, 2000).

Following Salovey and Mayer's original work, the construct of EI began to gain momentum both in scientific publications and in the general media. Daniel Goleman's bestselling book, *Emotional Intelligence,* argued that EI was, at times, more important than

IQ and was strongly linked to job performance (Goleman, 1995). Both *Time* and *USA Today Weekend* magazines dedicated stories to EI, describing it as a strong predictor of school success, work performance, and success in life in general (Gibbs, 1995; Goleman 1995). The rise in popularity of EI among the public caught the attention of industry. As of 2008, there were "57 EI-oriented consulting firms, 90 organizations with training/assessment specialties in EI, 30 EI certification programs, and 5 EI universities" (Joseph & Newman, 2010, p. 54). The growth of the EI field has not been without its critics, however, and empirical support for some of the claims that have been made about the construct has been inconsistent at best. For example, research has failed to consistently demonstrate the supposedly strong link between EI and job performance (Boštjančič, 2010; Newsome et al., 2000; Zeidner, Matthews, & Roberts, 2004). Moreover, academics have not reached a consensus regarding the definition of EI. However, advocates of EI agree that these setbacks are not enough to advocate that the concept of emotional intelligence should be abandoned. Instead, it is more likely that the popular media latched onto the construct so quickly that exaggerations and hyperbole began to proliferate, unchecked by science. Thus, current research seeks to reach a consensus regarding the definition of EI, identify the nomothetic structure of the construct, create valid and reliable measures, determine the factors that make up the nomological network surrounding it, and assess its utility in predicting crucial work and social outcomes (Cherniss, 2010; Côté, 2010; Jordan, Dasborough, Daus, & Ashkanasay, 2010; Roberts, Matthews, & Zeidner, 2010).

Defining and Measuring EI

A major criticism of emotional intelligence is the abundance of purported definitions and the lack of consensus among them (Cherniss, 2010). Descriptions of emotional intelligence can be dichotomized into two categories: the ability model and the mixed model. The two approaches postulate different underlying components of EI and utilize different measurement methods to assess it. Mixed model measures employ self-report methods, whereas ability measures are more objective in that individuals' responses to emotional stimuli and emotionally laden questions are evaluated for correctness based on objective criteria. The mixed model approach views EI as a broad set of skills, abilities, motivations, personality traits, and values that can contribute to or detract from effective performance across a variety of situations and is predominantly measured using the EQ-I (Cherniss, 2010). The ability approach defines EI as a combination of four separate but correlated abilities: the ability to perceive and express emotion, the ability to assimilate emotion in thought, the ability to understand and reason with emotional data, and the ability to manage emotion in the self and others. This model provides the theoretical basis for the most popular ability measure of emotional intelligence, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer & Salovey, 1997; Mayer, Caruso, & Salovey, 1999). Correlations between ability model measures and mixed model measures have been relatively low ($r_{corrected} = .26$; Joseph & Newman, 2010; Van Rooy et al., 2005), suggesting the two measures are mostly independent. This is problematic for measures that are intended to assess the same construct, and indicates a problem with one or more of the measures. The following sections review

the literature on the two different approaches to EI and address the strengths and weaknesses of each approach.

The Mixed Model of Emotional Intelligence

The mixed model approach views EI as a mixture of personality-like traits, abilities, skills, values and motivations that influence behavior (e.g., Byrne, Dominick, Smither, & Reilly, 2007). Essentially, it is a broad approach to understanding emotional intelligence and contains a mixture of many different constructs. The two prominent conceptualizations of EI that fall under the mixed model category include Boyatzis and Goleman's emotional and social competency (ESC) approach and Bar-On's emotional-social intelligence approach (ESI).

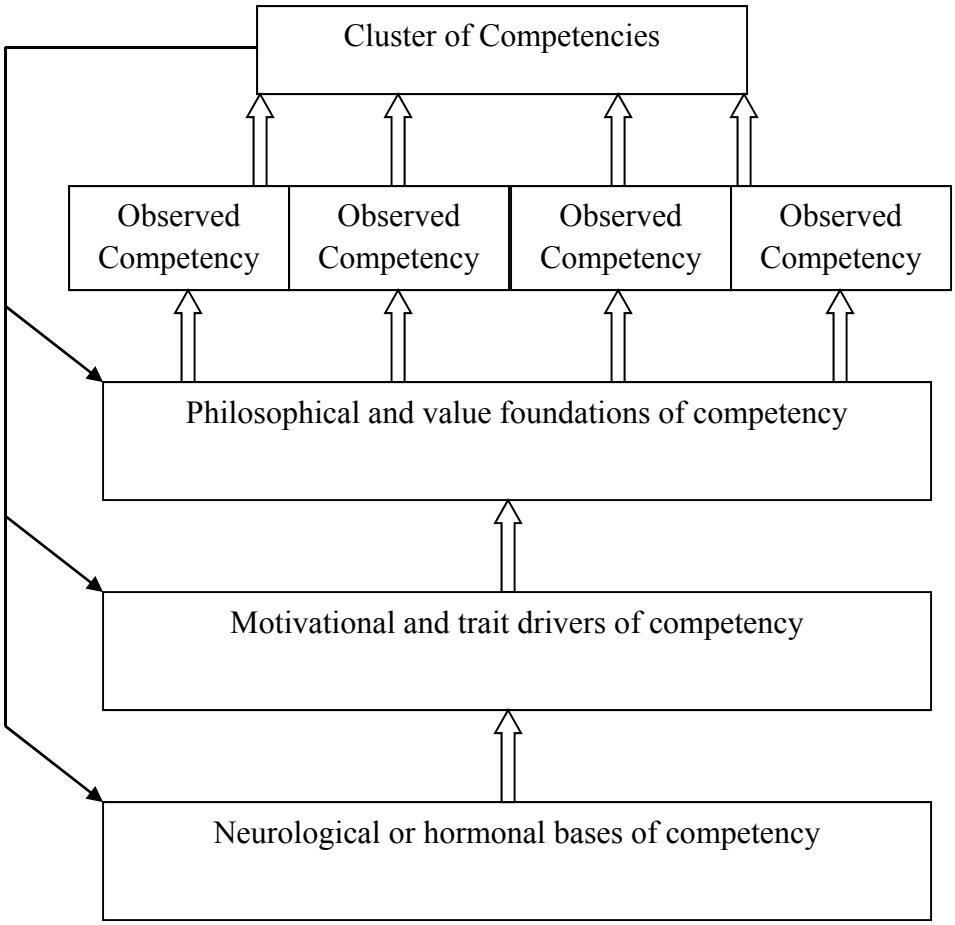
The Boyatsiz-Goleman ESC model

The Boyatzis-Goleman's ESC model defines EI as an observable set of competencies that constitute self-awareness, social-awareness, self-management, and social skills employed at appropriate times and in effective ways (Boyatzis, Goleman, & Rhee, 2000). It is measured using the Emotional Competence Inventory (ECI), a 110-item multi-rater inventory (also called a "360-degree" inventory). The competencies were determined based on previous organizational research that linked specific competencies to successful job performance. One of the purported benefits to this approach to EI measurement is it provides a "focal point" based on empirically-determined competencies that can then be linked to important outcomes, such as performance. Also included in this model are neurological components predisposing specific personality traits and the underlying motivations that drive

competencies. All of these factors subsequently combine with one's values, leading to the expression of competencies through observable behaviors (Figure 1). Therefore, emotional intelligence is a mixture of neurological predispositions, personality traits, motivations, and values that drive competencies.

Few peer reviewed studies have been conducted on the ECI concerning its reliability and validity. Of studies that have been conducted, internal consistencies range from $0.61 < \alpha < 0.85$ on the self-assessment scale and $0.80 < \alpha < 0.95$ on the peer and supervisor scale (Gowing, 2001; Sala, 2002). Studies exploring the incremental validity of the ECI over and

Figure 1: Boyatzis-Goleman Emotional Social Competence approach to EI



above the variance in performance explained by the Big Five personality measures were very disappointing, suggesting the ECI offers little predictive value beyond that of the Big Five when job performance is the criterion (Matthews et al., 2002; Van Rooy et al., 2005). These studies raised serious concerns regarding divergent and predictive validity of the measure, and so some authors have discouraged the use of the ECI in organizations (Conte, 2005).

The Boyatzis-Goleman model has received criticism for a variety of reasons. First, the model lacks a strong theoretical basis and is instead founded on anecdotal evidence and questionable conjecture (Hedlund & Sternberg, 2000). Additionally, what research exists assessing the psychometric properties of the ECI has yielded discouraging results. Conte's (2005) review of the literature suggested ECI measures display a strong overlap with personality and concepts of motivation and leadership, which brings into question the discriminant validity of this EI model.

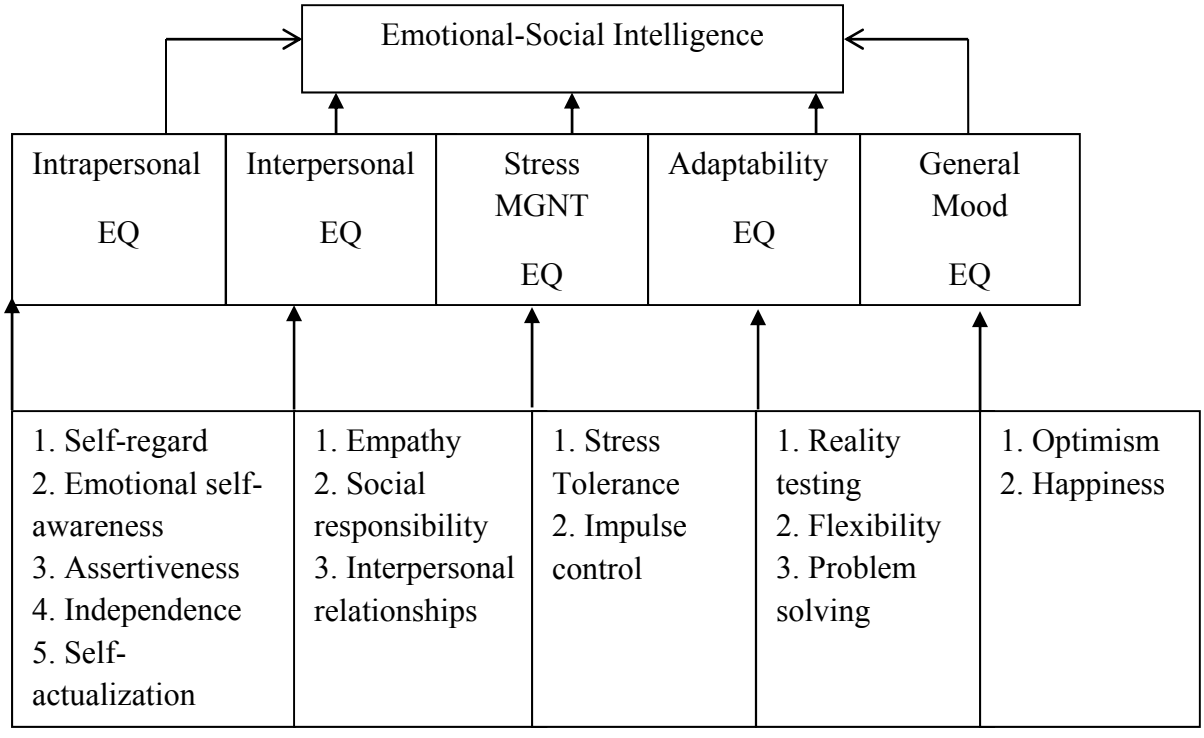
Bar-On's ESI model

The other mixed-model conceptualization of EI is Bar-On's model of emotional and social intelligence (ESI). Bar-On's model describes a broad range of emotional and social competencies and skills and facilitators that impact emotionally intelligent behavior (Bar-On, 2006). The EQ-i is a self-report inventory used to measure ESI. It contains 133 items and assesses the degree to which an individual's behavior is emotionally and socially competent. Each item is measured on a 5-point scale and is comprised of five composite scales (intrapersonal EQ, interpersonal EQ, stress management EQ, adaptability EQ, and general mood EQ) and 15 subscales (Figure 2). The EQ-i provides a total score and scores on the

five composite scales (Bar-On, 2000). The EQ-i is the most widely used measure of emotional intelligence, and has been translated in 30 languages (Bar-On, 2006).

Unlike the Boyatzis-Goleman model, there is ample research concerning the ESI model and its primary measure, the EQ-i. Some of these findings have been encouraging with respect to the psychometric properties of the measure. For instance, the internal consistency of the scale and its components is impressive. Bar-On (2006) reviewed the literature and

Figure 2: Bar-On's Emotional-Social Intelligence Approach



reported a total scale internal consistency of $\alpha = 0.97$ and a test-retest reliability of $\alpha = 0.72$ for men and $\alpha = 0.80$ for females. Dawda & Hart (2000) reported similar findings,

demonstrating a total scale internal consistency of $\alpha = 0.96$ with individual subscales ranging from $0.86 < \alpha < 0.93$. Furthermore, studies on criterion-related validity regarding the EQ-i seem promising as well. For example, high EQ-i scores have been linked to lower levels of stress, better health, and overall managerial performance (Slaski & Cartwright, 2002). Other studies have reported similar links to job performance and health (Bachman et al., 2000; Handley, 1997, as cited in Bar-On, 2006).

Despite these results, however, these studies did not determine whether the EQ-i offered any incremental validity over personality, or whether it was redundant with personality measures. Bar-On (2006) bristled at this suggestion and attempted to refute claims that the EQ-i was redundant with the Big Five, reporting correlations between personality and the EQ-i of around $r = 0.15$ on average. Contrary to Bar-On's findings, however, a more recent study showed that the Big Five personality traits explained the vast majority of the variance in EQ-i scores (multiple $R = 0.79$), solidifying the claim that Bar-On's model may lack discriminant validity (Grubb & McDaniel, 2007). Other validity studies have also been discouraging. Newsome, et al. (2000) found no relationship between the EQ-i and academic success. Moreover, the EQ-i shared a strong overlap with the 16-PF personality inventory, suggesting that the EQ-i adds little incremental variance beyond personality. Another study comparing the EQ-i to the NEO-FFI reported significant correlations in all facets of the Big Five except openness to experience with correlations between the EQ-i scales and personality factors as high as $r = 0.72$ (Dawda & Hart, 2000). Perhaps the final nails in the coffin for the EQ-i and similar measures like the ECI, two

recent meta-analytic studies assessing the construct validity of EI measures suggested that mixed model measures overlapped extensively with Big Five models of personality and may be virtually redundant (Joseph & Newman, 2010; Van Rooy, et al., 2005). As if this were not enough, Grubb & McDaniel (2007) also found that the EQ-i:S (a short form of the EQ-i) was susceptible to faking. Participants were able to artificially inflate their scores (as much as 0.62 SDs) despite the presence of a "positive impression" scale designed to detect faking. Therefore, it shouldn't be surprising that in his literature review, Conte (2005) admonished against the use of EQ-i as a selection measure, citing lack of discriminant validity as a primary concern.

Another problem with the EQ-i is that it shares weak correlations with other measures of cognitive ability. Derksen et al. (2002) evaluated the relationship between the General Adult Mental Ability scale (GAMA) and the EQ-i total scale and subscales. All correlations were weak with no correlations exceeding $r = .05$. An abundance of other studies reported similar findings, suggesting correlations between the EQ-i and cognitive ability of no more than $r = .11$ (Joseph & Newman, 2010; Van Rooy et al., 2005). These findings are problematic for the EQ-i because a measure of emotional intelligence should be correlated with other forms of intelligence. Ideally, emotional intelligence measures should be moderately correlated with general intelligence indicating the constructs are related, yet distinct. The absence of this relationship suggests that the EQ-i is too distinct to be considered a measure of intelligence. This finding, coupled with high correlations with

personality measures, seems to suggest that the EQ-i is more of a measure of personality than an aspect of intelligence.

In short, there are several reasons to have concerns about the adequacy of the mixed-model (trait) model of emotional intelligence. Mixed model measures of emotional intelligence have been criticized for a variety of reasons. First, they encompass a variety of concepts not measured by traditional intelligence tests, which makes them too conceptually broad to be of any use in prediction of behavior (Hedlund & Sternberg, 2000). The Boyatzis-Goleman model posited EI is a mixture of personality traits, motivations, values, and competencies (2000). Bar-On (2006) described EI as a mix of interrelated emotional and social competencies, skills, and facilitators that impact intelligent behavior. These models are referred to as mixed-models because a variety of different constructs are integrated into the description of EI, but it is possible that this concept of EI includes so much construct space that criterion contamination is nearly inevitable. Second, mixed model measures are closely related to models of personality and too independent from cognitive ability measures which raises questions concerning construct validity (Grubb & McDaniel, 2007; Joseph & Newman, 2010; Roberts, et al., 2010; Van Rooy, et al., 2005). Finally, mixed model measures are self-report inventories, where respondents indicate the degree to which they possess purported qualities of emotional intelligence. Critics argue standard self-report inventories are a questionable method for assessing any form of intelligence because it is likely that individuals will attempt to present themselves in a socially desirable manner, especially if there are benefits (Côté, 2010). Even if participants attempt to respond

candidly, it is likely that there may be discrepancies between perceptions of ability and actual ability. For example, self-report EI inventories only show low to moderate correlations with ability EI inventories, which will be discussed later in this paper (Davies, Stankov, & Roberts 1998; Joseph & Newman, 2010; Van Rooy et al., 2005). In addition, as evidenced by Bar-On's (2006) own data, the internal consistency of the self-report EQ-i scale is extremely high, while peer ratings of the same person show more variability. This could indicate that the self-report EI measure, almost by definition, is requesting data about one's "emotional intelligence" that is not available to the respondent's consciousness. Thus, the bias to report what should be the "right" answer is probably quite strong. On the basis of these criticisms (both empirically and theoretically), another approach to emotional intelligence measurement was developed.

Emotional Intelligence as an Ability

Advocates of the ability approach to EI argue that a measure of intelligence should adhere to the traditional criteria of other intelligence constructs in that it reflects mental performance, defined by an interrelated set of abilities that are related to yet distinct from other forms of intelligence and that increase as a function of age and experience (Mayer, et al., 1999). Contrary to the mixed model approach, the ability model adopts a more restrictive conceptualization of EI, describing it as an ability containing four factors: (a) the ability to perceive emotions accurately, (b) the ability to assimilate emotion in thought, (c) the ability to understand emotional data, and (d) the ability to manage felt emotions and manipulate others' emotional reactions (Mayer & Salovey, 1997). Proponents of this model argue that

there are individual differences in abilities to respond to emotionally-laden stimuli and some responses are more desirable and correct than others. Further, correct responses can be detected and measured, leading to more desirable outcomes. The ability approach is based on theoretical underpinnings that apply to other intelligence constructs, and therefore is more consistent with an intelligence-based construct.

The predominant ability-based measure of EI is the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, et al., 1999). It is considered the preferred method for assessing emotional intelligence as an ability because of its psychometric properties and its structure. Past psychometric research indicates excellent internal consistency ($0.91 < \alpha < 0.93$) on the overall EI scale and good internal consistency among the various facets ($0.76 < \alpha < 0.91$) (Mayer, Salovey, Caruso, & Sitarenios, 2003). In addition, the MSCEIT adheres to standards of intelligence measures in that it is based on a definition that is operationalized as a set of interrelated abilities, it increase as a function of age and experience, and it is related to but independent of cognitive ability (Mayer, et al., 1999; Mayer, Salovey, Caruso, & Sitarenos, 2001). Furthermore, the MSCEIT is scored based on the endorsement of correct responses to specific problems, placing responses in specific contexts. Correct responses are determined using consensus criteria or expert criteria. Consensus criteria are established by gathering judgments from a large sample of people, and the most popular answer is weighted as the most correct one. Expert criteria are identified in a similar fashion, except the sample is comprised of a panel of subject matter experts (SMEs). Answers that correspond with those contributed by SMEs are considered

correct (Mayer, et al., 2000). Although the method of scoring of the MSCEIT has been subject to much criticism, research has indicated consensus scoring and expert scoring are fairly highly intercorrelated across the facets, suggesting that scoring does not differ as a function of the scoring method employed (Mayer, et al., 1999; Mayer et al., 2003).

The validity of the MSCEIT is generally considered to be quite good (Cherniss, 2010). For instance, research supports the factor structure of the MSCEIT (Day & Caroll, 2002; Mayer, et al., 2003). Studies have also shown that personality measures and MSCEIT scores are not strongly correlated, avoiding a problem that has plagued trait-based models of EI (Brackett et al., 2004; Day & Caroll, 2002; Mayer, et al., 2003). With respect to convergent validity, the MSCEIT is generally correlated as expected with measures of cognitive ability. Studies indicated a moderate correlation of about $r = 0.35$ with verbal intelligence and slightly lower correlations with perceptual/organizational IQ (Ciarrochi, Chan, & Caputi, 2000; Mayer et al., 1999; Van Rooy et al., 2005). However, other data suggest that there is still work to be done at the facet or component level. The emotional perception facet of the MSCEIT is only weakly correlated with other tests of emotional perception such as the Japanese and Caucasian Brief Affect Recognition test (JACBART) and the Levels of Emotional Awareness Scale (LEAS) (Cherniss, 2010). It should be noted that this finding was one of the triggers that led to the construction of the current study regarding facet-level measurement of EI.

Finally, research suggests that the MSCEIT also exhibits predictive validity in work performance and success in social situations over and above that contributed by cognitive

ability and personality measures. Brackett, et al. (2004) showed that EI in men was associated with lower incidence of drug use and deviant behavior at work, as well as with stronger relationships among peers, even after controlling for personality and cognitive ability. Other evidence showed that EI is associated with company rank, percent merit salary increase, and ratings of interpersonal facilitation after controlling for personality and verbal ability (Lopes, et al., 2006). EI has also been shown to predict stress in coping responses in various applied settings. Specifically, EI was negatively related to undesirable coping strategies such as anxiety and avoidance coping even after controlling for personality (Matthews, et al., 2006). In short, EI as measured by the MSCEIT appears to be conceptually and empirically distinct from personality and cognitive ability (however, see Joseph & Newman, 2010, for a somewhat conflicting opinion).

Comparing the Perspectives

The mixed model approach of EI has hailed both support and criticism from academics and practitioners alike. Advocates of this approach argue that mixed model measures exhibit evidence for predicting job performance (Bar-On, 2006; Slaski & Cartwright, 2002). Furthermore, there is strong support for its reliability (Dwada & Hart, 2000; Bar-On, 2006). However, consistent reliability of a measure is not enough for it to be considered psychometrically sound. Opponents counter that the mixed model approach does not conform to the standards of traditional intelligence tests and, therefore, lacks the theoretical underpinnings to be considered a form of intelligence. Neither the Boyatzis-Goleman model nor the Bar-On model operationalizes EI as a set of interrelated abilities.

Instead, mixed model definitions of EI are plagued with vague descriptions that include a mixture of motivation, personality traits, facilitators, skills, and competencies that facilitate intelligent behavior (Cherniss, 2010). The evidence that the ECI and the EQ-i measures are redundant with personality and contribute no incremental variance to the prediction of outcomes after controlling for personality is also problematic (Dwada & Hart, 2000; Newsome, et al., 2000; Conte, 2005; Van Rooy, et al., 2005; Joseph & Newman, 2010). The ECI and the EQ-i also correlate weakly with cognitive ability, which is suspicious, considering it is supposedly a measure of intelligence (Joseph & Newman, 2010; Van Rooy, et al., 2005).

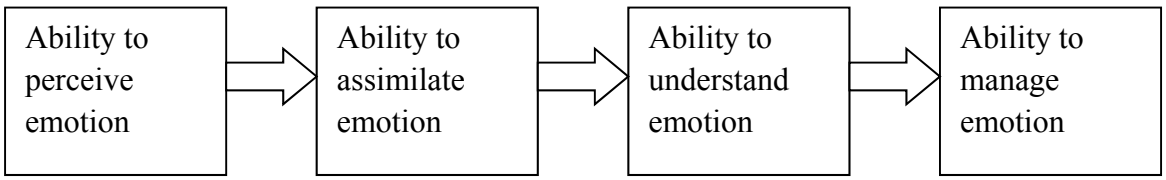
Regarding the ability approach to EI measurement, the psychological community is much more optimistic for a variety of reasons. First, the ability approach adheres to traditional standards of intelligence tests, and it is related to other measures of cognitive ability. Second, it does not appear to be strongly correlated with personality, and is sensitive to the positive impact of experience and maturity on emotional intelligence (Mayer, et al., 1999). The MSCEIT, the predominant ability measure, exhibits the strongest psychometric support of any emotional intelligence measure (Cherniss, 2010). It is founded on a strong theoretical base, and there is promising support for its construct and predictive validity. Most importantly, there is also evidence that it provides incremental validity beyond cognitive ability and personality (Brackett, et al., 2004; Lopes, et al., 2006; Matthews, et al., 2006).

Rationale for the Current Study

Despite the quality of the ability-based EI theory and its measure, the MSCEIT, recent research has raised an issue about the nature of its facets (Newman, Joseph, & MacCann, 2010; Joseph & Newman, 2010). These researchers argue that some facets may be more "foundational" than others, organized in more of a serial interdependency structure than four independently-operating skills. If certain facets are based on more fundamental facets of EI, the basic approach to studying EI would have to change as well.

The idea that facets might be understandable as separate entities grew out of some dissatisfaction with the length of the MSCEIT and its reliance on an experimenter to assist the participant through the written copy of the test (the computerized version of the test automates this requirement). The test is comprised of 141 items and takes approximately 45 minutes to complete. For this reason, incorporating the MSCEIT into an organizational setting may be too costly in both time and money. In response, researchers have explored the idea that individual facets can be measured as part of a sort of "ability buffet," offering several aspects of EI that can be chosen *a la carte.* However, studies have begun to show that the facets of EI are somewhat serially dependent; that is, certain abilities (i.e., emotional understanding) are predicated on the existence of other abilities. In other words, it is a fully mediated model in that ability to perceive emotions is required for the ability to assimilate emotion in thought, which is required to understand emotion which is in turn required for emotional management (Figure 3). In this vein, emotional management has been suggested

Figure 3: The Mediated Ability Model of EI



as the "foundational" ingredient in emotional intelligence (Newman, et al., 2010). Along these theoretical lines, the current study focuses on the construct validity of a new instrument, the Situational Test of Emotional Management (STEM; MacCann & Roberts, 2008), designed to measure emotional management as a separate construct.

The STEM is designed as a situational judgment test (SJT), a relatively new approach to measurement in psychology and one that has gained much favor for its real-world contexts and behavioral focus (Adler, 2007; Weekley & Ployhart, 2005). Situational judgment tests (SJTs) are designed to measure an individual's judgment in various situations (McDaniel & Nguyen, 2001; O'Connel, Hartman, McDaniel, Grub & Lawrence, 2007; Christian, Edwards, & Bradley, 2010).

One particular strength of the SJT approach is that the content of the instrument and scoring criteria is typically contributed by SMEs that have substantial real world experience and understand the behaviors that will significantly impact, either positively or negatively, the situation at hand. Further, SJTs are an appealing measurement method because they can be employed to assess a variety of constructs such as job performance, leadership, cognitive ability, personality tendencies, integrity, interpersonal skills, and teamwork skills (McDaniel

& Nguyen, 2001; Christian, et al., 2010). SJTs have been shown to predict important organizational outcomes as well (e.g., O'Connell, et al., 2007) over and above personality and cognitive ability. Finally, SJTs are context-based and can be easily framed in behavioral terms, an important characteristic for any measure that is rooted in an ability-based model.

The STEM was developed using a three stage process that is typical of SJTs (MacCann & Roberts, 2008). In the first stage test items are generated. To do this, researchers interviewed 19 males and 31 females (30 psychology students and 20 community volunteers) and asked them to discuss emotional situations they experienced in the past two weeks. Test developers grouped incidents with similar themes into categories or content areas, and the incidents serve as stems for creating test items. The content areas for the STEM included four different emotions: sadness, anger, fear, and disgust. Items were framed in a "workplace" or "personal life" context and presented in one of three situations "fight/argument", "goal striving impeded", and "unfairness/injustice".

In the second stage response options are generated. A student sample of 43 men and 56 women responded to the items by writing the best thing to do in the situation and what they would actually do in the situation. Central tendency measures were collected in order to identify the variance in the responses. Ninety-four of the one hundred thirty-eight items were removed because there was little discrepancy between the best option and what the individual would actually do. It is likely that everyone would respond the same to these items, which would reduce the variance in STEM scores and thus degrade the predictability of the measure. These responses served as the answer options for the remaining forty-four items.

The purpose of the third stage is to create a scoring rubric based on expert opinion. To do this, subject matter experts (SMEs) were divided into two groups to rate each solution. The first group simply responded to the items as if it were a multiple choice test, marking the best solution for each item. The proportion of experts that marked each response choice was used to create a corresponding weight for that option. For example if two-thirds of the experts selected response option A it would receive a weight of 0.667. The second group of SMEs rated the strength of each item in terms of correctness on a 6-point Likert scale. The mean rating for each response item was calculated and used as a weight for each response option. For example, if the average rating for response option A may be 5.2 and the rating for response option B may be 2.6. Thus, the STEM can be scored by either using expert proportion weights, which is referred to as the multiple-choice scoring method, or by using expert mean ratings, which is known as the "rate-the-extent" scoring method. Both scoring methods provide the researcher with ordinal data. While the method described above is not the only way to create an SJT (McDaniel & Nguyen, 2001), as this is the technique utilized to develop the STEM, it was presented here.

The Current Study

The current study will evaluate the Situational Test of Emotional Management (STEM; MacCann & Roberts, 2008) with respect to the impact of specific independent variables on item-level scores. Preliminary analyses have suggested that the STEM has adequate reliability and construct validity, but further studies are needed to assess its psychometric properties more completely (MacCann & Roberts, 2008). The STEM will be

scored using the rate-the-extent format because an initial analysis of the STEM indicated a superior reliability ($\alpha = 0.92$) compared to the STEM multiple choice ($\alpha = 0.72$). The STEM will contain only thirty of the forty-four original items. Adhering to the suggestions of MacCann and Roberts (2008), fourteen of the least reliable items were removed. The current study will utilize a logistic regression technique to assess each item. At the item level, scores will be dichotomized according to the expert ratings assigned to each option. The preferred choice for each item, as indicated by highest mean rating, will be separated from the other choices, creating a dichotomous criterion (correct v. incorrect). In the case where two response-options are weighted equally, both response options will be considered "correct". Then, the effect of two factors – gender and Extraversion – will be assessed on cell counts for each of the items. While a structural model would be preferable to logistic regression for an omnibus test of construct validity, the scaling of the STEM does not strictly conform to interval or ordinal assumptions. Logistic regression was chosen because its assumptions are much more lenient and so it can be applied successfully to an instrument like the STEM (Tabachnick & Fidell, 2010). Further, logistic regression is capable of handling continuous predictors, where structural modeling would have forced an arbitrary grouping of the Extraversion factor.

These moderators could significantly impact choices on the STEM for several reasons. With respect to gender, there is evidence to suggest that men and women process emotional data differently, especially when processing language (e.g., Phillips, Lowe, Lurito, Dzemdzic, & Mathews, 2001). Further, a strong body of literature indicates women score

significantly higher than men on all subscales of the MSCEIT (Bracket et al., 2004; Day & Carroll, 2004; Mayer et al., 2000) Since the STEM is based on the same theoretical foundation as the MSCEIT, it is likely that this difference may also occur in the STEM. Logistic regression at the item-level will indicate the extent to which gender accurately classifies individuals into two groups "correct" and "incorrect". If gender is a significant predictor on multiple items, this would indicate potential problems with the wording of the items, response-options, or potentially the measurement model. A more omnibus test, structure equation modeling (SEM), is needed to assess the underlying measurement model across gender. However, for reasons previously stated, SEM was unable to be used. Thus, we will employ logistic regression at the item level for men and women to elucidate any problems that may arise from bias in items, response options, or potential measurement variance across gender.

With respect to Extraversion, this trait is closely linked to the left prefrontal cortex, an area of the brain critical to the experience of positive emotionality (Davidson, Jackson, & Kalin, 2000; Gray & McNaughton, 2000; Tomarken & Keener, 1998). If emotion management can be seen at the brain level, then it is likely that the prefrontal cortex would be involved, and Extraversion could be a proxy for that activity. Some indirect evidence exists to support this idea. Extraversion has been shown to moderate the relationship between emotional perception and transformational leadership, such that extraverts are more likely to be seen as effective transformational leaders (Rubin, Munz, & Bommer, 2005). Moreover there is evidence suggesting that Extraversion is linked indirectly to positive affect through

the use of reappraisal, an emotional regulation strategy, whereas neuroticism is indirectly linked to negative affect through the same emotion regulation strategy (Wang, Shi, & Li, 2009). In line with this literature, it follows that since Extraversion may predispose individuals to employ emotional regulation strategies resulting in positive affect, these individuals may be better at managing emotions. Therefore, those high in Extraversion may perform better on a test of emotional management. Thus, we will evaluate the impact of gender and Extraversion on item-level decisions on the STEM instrument.

Hypotheses

It is expected that, at the item-level, a logistic model including gender and Extraversion will significantly predict classification of participants into two groups (expert-preferred option or not) beyond a simple intercept-only logistic regression model. Because this analysis plan has the potential to "capitalize on chance" by virtue of the sheer number of tests, an additional specification to the above expectation is needed. Given that we should expect one test in 20 to be significant at the $p = .05$ level regardless of actual theoretical relationships between the variables, and considering that the STEM is composed of 30 items, the hypothesis above must be supported in *three or more item-level models* to be considered confirmed.

METHOD

Participants

The sample consisted of 316 undergraduate students (108 men and 208 women) taken from psychology courses at Angelo State University. Participants ranged in age from 17 to 53 years, and the average age was 19.89 (S.D. = 3.65). As an incentive for participation, participants received extra course credit for their time. All participants were treated in accordance with current APA ethics for handling of human subjects.

Measures

Demographic questionnaire. This survey contained four questions and was used to collect the names, ages, and genders of participants. Names were collected only to assign credit and were discarded afterwards.

Personality inventory. The International Personality Item Pool (IPIP) version of the 50-item measure of the Big Five personality structure (Goldberg, 1999) was used in this study. Extraversion is measured as a part of this scale and consists of 10 items, five of which are reversed-scored. The reported internal consistency of this scale is $\alpha = 0.84$ (http://ipip.ori.org), and the scale is reproduced in Appendix A.

Situational Test of Emotion Management (STEM): The STEM is a 30-item situational judgment test (SJT) that uses hypothetical behavioral scenarios followed by a set of possible responses to the situation. Respondents must choose which option they would most likely select in a "real" situation. As a part of the test development, these options were rated and scored by sets of experts in emotional intelligence. The respondent's choice is

assigned a numerical value based on the expert weights previously calculated. Therefore, this instrument does not use a standard Likert scale format, but instead a weighted, forced-choice format that is also not strictly ordinal. Research suggests that the internal consistency of the STEM "rate-the-extent" scoring format is approximately $\alpha = 0.92$ (MacCann & Roberts, 2008). This instrument is also reproduced in Appendix A.

Procedure

Participants sat at a computer station and signed a consent form which briefly explained the nature and purpose of the project. Next, either the IPIP personality inventory or the STEM instrument was administered according to a randomly-generated testing schedule. Following the completion of the first inventory, participants were instructed to play a simple computer game called Parking Dash, where players control a character responsible for valet parking in a small parking lot. The goal is to keep customers as happy as possible by quickly parking and returning their car. Participants played Parking Dash for eight minutes in an attempt to control for possible effects of common method variance (CMV), since all data in this study is being gathered using self-reports (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003). Next, the second self-report instrument was completed, and then participants were debriefed and released.

RESULTS

Prior to the primary analysis, a total STEM score was calculated by summing expert mean weighted ratings for each item. In order to identify outliers, scores were transformed into standardized z scores. In accord with Tabachnick and Fidell's (2010) suggestions regarding detecting univariate outliers, cases with z scores above or below 3.29 ($p < .001$, two tailed test) were considered outliers and removed from further analysis. After removal of two outliers from Extraversion, the sample consisted of 107 men and 207 women.

Descriptive statistics for Extraversion, gender, and total STEM score were calculated. The mean score for Extraversion was 30.84 (SD = 2.29), and the mean score for the STEM was 136.26 (SD = 7.67). Comparing means on the STEM between genders, the mean for women was 137.14 (SD = 6.75) whereas the mean for men was 134.56 (SD = 8.97). A one way ANOVA indicated this mean difference was significant, $F(1,312) = 8.152$, $p = .005$. A bivariate correlation was conducted to assess the relationship between Extraversion and global STEM scores, which was non-significant
($r(314) = -0.03$, *n.s.*).

To assess the contribution of gender and Extraversion on the STEM items, sequential logistic regression analyses were performed to assess prediction of membership in one of two categories of outcome (correct answer and incorrect answer) for each of the 30 items of the STEM. In all cases, gender was entered first as the primary independent variable and Extraversion was entered second. In preparation for the analyses, correct answers were determined based on expert scoring. Response choices with the highest expert score were

deemed correct (coded 1) and all other choices were considered incorrect (coded 0). Two response options in question 8, 10, and 15 shared the same mean expert rating. In these

Table 1

Distribution of Correct and Incorrect Responses on the STEM Items Separated by Gender

Item Number	Men		Women		% Correct
	Correct	Incorrect	Correct	Incorrect	
Item 1	57	50	103	104	50%
Item 2	30	77	80	127	35%
Item 3	61	46	116	91	56%
Item 4	70	37	137	70	66%
Item 5	58	49	133	74	61%
Item 6	49	58	112	95	51%
Item 7	59	48	130	77	60%
Item 8	67	40	138	69	65%
Item 9	86	21	169	38	81%
Item 10	91	16	173	34	86%
Item 11	87	20	184	23	86%
Item 12	66	41	156	51	70%
Item 13	39	68	83	124	38%

Table 1 (Cont.)

Distribution of Correct and Incorrect Responses on the STEM Items Separated by Gender

Item Number	Men		Women		% Correct
	Correct	Incorrect	Correct	Incorrect	
Item 14	74	33	176	31	80%
Item 15	75	32	163	44	75%
Item 16	12	95	25	182	11%
Item 17	67	40	125	82	61%
Item 18	34	73	46	161	25%
Item 19	86	21	190	17	88%
Item 20	53	54	119	88	54%
Item 21	44	63	91	116	42%
Item 22	76	31	160	47	75%
Item 23	49	58	114	93	51%
Item 24	90	17	176	31	85%
Item 25	90	17	186	21	81%
Item 26	37	70	81	126	38%
Item 27	34	73	64	143	31%
Item 28	37	68	69	138	33%

Table 1 (Cont.)

Distribution of Correct and Incorrect Responses on the STEM Items Separated by Gender

Item Number	Men		Women		% Correct
	Correct	Incorrect	Correct	Incorrect	
Item 29	75	32	139	68	68%
Item 30	92	15	193	14	91%

instances, answers sharing the same mean expert rating were deemed correct and all other answers were considered incorrect. Table 1 presents the response selection distributions for all 30 items separated by gender.

Overall classification based on gender and Extraversion was unimpressive. Prediction of group membership did not change at all from the constant only model (no predictors) to the full model (gender and Extraversion) for 25 of the 30 items. Classification for the five items that did change was minimal with the greatest increase in percentage of classification only 5.4%, from 51 % in the constant model to 56.4% in the full model. However, the addition of gender and Extraversion was not significant for any of these five items. Gender was a significant univariate predictor of correct/incorrect STEM responses on four items: Item 12, Item 14, Item 19, and Item 30 (see Table 2). For Item 12, the addition of gender to the model was significant (χ^2 (1) = 6.24, $p < .05$, Nagelkerke $R^2 = .028$). The odds

ratio (Exp(B) = 0.526) suggested that men were almost half as likely as women to answer Item 12 correctly. The addition of gender to the model for Item 14 was also significant (χ^2 (1) = 10.51, $p < .05$, Nagelkerke $R^2 = .052$). The odds ratio (Exp(B) = 0.395) suggested that men were 60% less likely to answer Item 14 correctly. For Item 19 the addition of gender to the model was significant (χ^2 (1) = 8.64, $p < .05$, Nagelkerke $R^2 = .049$). The odds ratio (Exp(B) = 0.366) suggested that men were over 60% less likely to answer the question correctly. Finally, gender was a significant predictor of responses on Item 30 (χ^2 (1) = 4.21, $p < .05$, Nagelkerke $R^2 = .029$). The odds ratio (Exp(B) = 0.445) suggested that males were slightly over half as likely to answer the item correctly. Despite these results, the addition of gender did not change the overall classification rates for any of the four items. Comparison

Table 2: Percentage of Correct Responses on Significant Items Separated by Gender

Item Number	Male	Female
Item 12: Daniel has been accepted for a prestigious position in a different country from his family, who he is close to. He and his wife decide it is worth relocating. *What action would be the most effective for Daniel?*	62%	75%
Item 14: Mei Ling answers the phone and hears that close relatives are in hospital critically ill. *What action would be the most effective for Mei Ling?*	69%	85%
Item 19: Hasina is overseas when she finds out that her father has passed away from an illness he has had for years. *What action would be the most effective for Hasina?*	80%	92%
Item 30: Julie hasn't seen Ka for ages and looks forward to their weekend trip away. However, Ka has changed a lot and Julie finds that she is no longer an interesting companion. *What action would be the most effective for Julie?*	86%	94%

of log-likelihood ratios indicated that the addition of Extraversion to the model was not significant for any of the items on the STEM.

DISCUSSION

The primary purpose of this study was to assess the influence of gender and Extraversion on the classification of correct and incorrect responses at the item-level for the STEM. Contrary to expectations, the data suggested that STEM items largely function similarly across levels of gender and Extraversion, which provides indirect support for the construct validity of the STEM. The addition of gender to the model was significant for four out of the thirty STEM items. Small effect sizes indicated that, despite significance, the impact of gender on accurate classification of these items is minimal, which explains why gender did not enhance accurate classification beyond that of the constant model for these items. Therefore, the four significant findings should be interpreted with caution. In this section, these results will be discussed in light of extant theory and future directions will be proposed.

The STEM was derived from the same theoretical foundation as the MSCEIT. A strong body of literature suggested gender differences across all facets of the MSCEIT in which women perform better than men (Ciarrochi, et al., 2000; Day & Carroll, 2004; Mayer, et al., 2000; Petrides & Furnham, 2000). As expected, the same trend was found for the STEM in the females scored significantly higher than males. Although mean gender differences in total STEM scores were found, gender did not enhance group classification at the item-level. One reason that this may have occurred was because of the large discrepancy between the frequency of correct and incorrect responses. For example, 285 participants chose the correct answer for Item 30, while only 29 chose the incorrect answer. The lack of

variability in selected response-options reduces the predictability of the item, which could in turn pose a problem for the predictive quality of the test. This was not an isolated issue and was a common trend found across 10 other items (See Table 1). While some of the questions appeared to be too easy, other items on the test appeared to be too hard. Only 37 participants chose the correct response option for Item 16, and 277 marked this question incorrect. This phenomenon occurred on two items (See Table 1). The discrepancy between expert opinion and the consensus opinion of participants is problematic, which may indicate a problem with the wording of the item and/or response-options.

The literature on Extraversion suggested an indirect link to positive affectivity through an effective emotion regulation strategy, reappraisal (Wang, et al., 2009). Therefore, it was thought that since extraverts employ effective emotion regulation strategies, they would in turn manage their emotions more effectively. Again, contrary to expectations this was not found. The lack of variability across response options may also account for the reason that Extraversion did not significantly enhance the accurate classification of individuals into groups. Another explanation may be that those low in Extraversion may employ useful emotion regulation strategies other than reappraisal. Regardless of one's sociability, individuals can make intelligent decisions regarding emotion management (Mayer, Caruso, & Salovey, 2008).

Results of this study might be interpreted to raise more questions than they answer. On the surface, the findings support the construct validity of the STEM because correct/incorrect responses are not a function of gender or Extraversion. However, the

frequency of correct/incorrect responses reveals little variability, which may indicate a problem with the items or response options. For ten items the correct response were chosen at least 75% of the time, with the highest frequency for item 30 (91%). Also, for two items the incorrect response was chosen 75% of the time and 89% of the time. The lack of variability in responses for twelve of the thirty items is problematic for the measure. Future studies should assess whether or not this phenomenon occurs in other samples, and if it does, the STEM may need some revision in order to develop items and response options that result in more experimental variability.

Limitations and Future Implications

The current study suffers from a few limitations. The sample consisted solely of undergraduate students from a psychology course who received course credit regardless of performance on the STEM. However, in a work-relevant context, the STEM would likely be included as part of a selection battery by which employment may be determined in part by a high score on the STEM. It would be interesting to determine if results from the current study generalized to a work-context where performance on the STEM matters. Also, individuals in a work context are likely to be older than typical college students. Therefore, it is also important to see if scores on the STEM are similar across age. As a proposed measure of intelligence, one would expect scores to slightly increase with age as a product of experience. This study takes one approach at establishing construct validity for the STEM. However to establish construct validity, it is also important to ensure that the STEM

converges with other similar measure of emotional management, such as the management facet of the MSCEIT.

Ultimately, the goal for the STEM is to be a useful predictor of work relevant outcomes. Once the STEM is determined to be content and construct valid, future studies should assess its utility as a predictor of desired organizational outcomes, such as performance. According to Newman, Joseph, & MacCann (2010) EI is likely to be most relevant, and thus, predictive in jobs high in emotional labor. Therefore, future studies assessing the predictive validity of the STEM should take into consideration the emotional context of the job. A logical next step for the STEM would be to address the issue concerning the variance in item response options. Following this, research should focus on developing evidence for construct validity, and then, assess the predictive value of the STEM against work related outcomes.

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APPENDIX A
Instruments Used in the Study

IPIP Big-Five Factor Markers

5-point response scale (1 = very inaccurate, 5 = very accurate)

Extraversion (10 items, alpha = X.XX)

I am the life of the party.

I don't talk a lot. (R)

I feel comfortable around people.

I keep in the background. (R)

I start conversations.

I have little to say. (R)

I talk to a lot of different people at parties.

I don't like to draw attention to myself. (R)

I don't mind being the center of attention.

I am quiet around strangers. (R)

Items and Expert Weights for the Situational Test of Emotion Management

Note: items marked with an asterisk were excluded from this study. Numbers in parentheses refer to expert scoring weights: (1) the mean rating of experts, and (2) the proportion of experts selecting that option.

1. Lee's workmate fails to deliver an important piece of information on time, causing Lee to fall behind schedule also. *What action would be the most effective for Lee?*
(a) Work harder to compensate. (3.2/0)
(b) Get angry with the workmate. (2.6/0)
(c) Explain the urgency of the situation to the workmate. (5.2/1.000)
(d) Never rely on that workmate again. (2.4/0)

2. Rhea has left her job to be a full-time mother, which she loves, but she misses the company and companionship of her workmates. *What action would be the most effective for Rhea?*
(a) Enjoy being a full-time mom. (2.8/0)
(b) Try to see her old workmates socially, inviting them out. (4.4/.250)
(c) Join a playgroup or social group of new mothers. (4.8/.667)
(d) See if she can find part time work. (2.8/.083)

3. Pete has specific skills that his workmates do not and he feels that his workload is higher because of it. *What action would be the most effective for Pete?*
(a) Speak to his boss about this. (4.6/.833)
(b) Start looking for a new job. (2.4/0)
(c) Be very proud of his unique skills. (3.2/.083)
(d) Speak to his workmates about this. (3.8/.083)

* 4. Mario is showing Min, a new employee, how the system works. Mario's boss walks by and announces Mario is wrong about several points, as changes have been made. Mario gets on well with his boss, although they don't normally have much to do with each other. *What action would be the most effective for Mario?*
(a) Make a joke to Min, explaining he didn't know about the changes. (4.0/.333)
(b) Not worry about it, just ignore the interruption. (2.2/0)
(c) Learn the new changes. (4.6/.417)
(d) Tell the boss that such criticism was inappropriate. (3.2/.250)

5. Wai-Hin and Connie have shared an office for years but Wai-Hin gets a new job and Connie loses contact with her. *What action would be the most effective for Connie?*
(a) Just accept that she is gone and the friendship is over. (2.6/0)
(b) Ring Wai-Hin an ask her out for lunch or coffee to catch up. (4.6/0)
(c) Contact Wai-Hin and arrange to catch up but also make friends with her replacement.

(5.6/.917)
(d) Spend time getting to know the other people in the office, and strike up new friendships. (4.4/.083)

* 6. Martina is accepted for a highly sought after contract, but has to fly to the location. Martina has a phobia of flying. *What action would be the most effective for Martina?*
(a) See a doctor about this. (4.4/.750)
(b) Don't go to the location. (1.4/0)
(c) Just get through it. (2.8/0)
(d) Find alternative travel arrangements. (3.0/.250)

7. Manual is only a few years from retirement when he finds out his position will no longer exist, although he will still have a job with a less prestigious role. *What action would be the most effective for Manual?*
(a) Carefully consider his options and discuss it with his family. (5.0/.750)
(b) Talk to his boss or the management about it. (4.4/.250)
(c) Accept the situation, but still feel bitter about it. (2.0/0)
(d) Walk out of that job. (1.0/0)

8. Alan helps Trudy, a peer he works with occasionally, with a difficult task. Trudy complains that Alan's work isn't very good, and Alan responds that Trudy should be grateful he is doing her a favor. They argue. *What action would be the most effective for Alan?*
(a) Stop helping Trudy and don't help her again. (1.8/.167)
(b) Try harder to help appropriately. (2.8/.083)
(c) Apologize to Trudy. (2.8/.083)
(d) Diffuse the argument by asking for advice. (4.6/.667)

9. Surbhi starts a new job where he doesn't know anyone and finds that no one is particularly friendly. *What action would be the most effective for Surbhi?*
(a) Have fun with his friends outside of work hours. (3.8/0)
(b) Concentrate on doing his work well at the new job. (4.0/.167)
(c) Make an effort to talk to people and be friendly himself. (5.4/.833)
(d) Leave the job and find one with a better environment. (2.4/0)

10. Darla is nervous about presenting her work to a group of seniors who might not understand it, as they don't know much about her area. *What action would be the most effective for Darla?*
(a) Be positive and confident, knowing it will go well. (4.0/0)
(b) Just give the presentation. (2.8/0)
(c) Work on her presentation, simplifying the explanations. (5.2/.667)
(d) Practice presenting to laypeople such as friends or family. (5.2/.333)

11. Andre moves away from the city his friends and family are in. He finds his friends make less effort to keep in contact than he thought they would. *What action would be the most effective for Andre?*
(a) Try to adjust to life in the new city by joining clubs and activities there. (4.8/0)
(b) He should make the effort to contact them, but also try to meet people in his new city. (5.6/1.000)
(c) Let go of his old friends, who have shown themselves to be unreliable. (2.2/0)
(d) Tell his friends he is disappointed in them for not contacting him. (3.2/0)

12. Helga's team has been performing very well. They receive poor-quality work from another team that they must incorporate into their own project. *What action would be the most effective for Helga?*
(a) Don't worry about it. (1.8/0)
(b) Tell the other team they must re-do their work. (4.6/.417)
(c) Tell the project manager about the situation. (4.6/.583)
(d) Re-do the other team's work to get it up to scratch. (2.6/0)

13. Clayton has been overseas for a long time and returns to visit his family. So much has changed that Clayton feels left out. *What action would be the most effective for Clayton?*
(a) Nothing – it will sort itself out soon enough. (2.6/0)
(b) Tell his family he feels left out. (4.4/.167)
(c) Spend time listening and getting involved again. (5.4/.750)
(d) Reflect that relationships can change with time. (4.6/.083)

* 14. Katerina takes a long time to set the DVD timer. With the family watching, her sister says "You idiot, you're doing it all wrong, can't you work the video?" Katerina is quite close to her sister and family. *What action would be the most effective for Katerina?*
(a) Ignore her sister and keep at the task. (4.0/.167)
(b) Get her sister to help or to do it. (3.6/.667)
(c) Tell her sister she is being mean. (3.6/.167)
(d) Never work appliances in front of her sister or family again. (1.6/0)

* 15. Benjiro's parents are in their late 80s and living interstate in a house by themselves. He is worried that they need some help but they angrily deny it any time he brings up the subject. *What action would be the most effective for Benjiro?*
(a) Visit frequently and get others to check on them. (4.4/.667)
(b) Believe his parents' claims that they are fine. (3.0/.167)
(c) Keep telling his parents his concerns, stressing their importance. (4.4/.167)
(d) Force his parents to move into a home. (1.4/0)

* 16. Max prides himself on his work being of the highest quality. On a joint project, other people do a lousy job, assuming that Max will fix their mistakes. *What action would be the*

most effective for Max?
(a) Forget about it. (1.4/0)
(b) Confront the others, and tell them they must fix their mistakes. (4.4/.750)
(c) Tell the project manager about the situation. (4.0/.250)
(d) Fix the mistakes. (2.4/0)

17. Daniel has been accepted for a prestigious position in a different country from his family, who he is close to. He and his wife decide it is worth relocating. *What action would be the most effective for Daniel?*
(a) Realize he shouldn't have applied for the job if he didn't want to leave. (1.4/0)
(b) Set up a system for staying in touch, like weekly phone calls or emails. (5.0/.833)
(c) Think about the great opportunities this change offers. (4.8/.167)
(d) Don't take the position. (1.2/0)

18. A junior employee making routine adjustments to some of Teo's equipment accuses Teo of causing the equipment malfunction. *What action would be the most effective for Teo?*
(a) Reprimand the employee for making such accusations. (2.0/0)
(b) Ignore the accusation, it is not important. (2.6/.500)
(c) Explain that malfunctions were not his fault. (3.4/.500)
(d) Learn more about using the equipment so that it doesn't break. (4.8/0)

19. Mei Ling answers the phone and hears that close relatives are in hospital critically ill. *What action would be the most effective for Mei Ling?*
(a) Let herself cry and express emotion for as long as she feels like. (4.4/.083)
(b) Speak to other family to calm herself and find out what is happening, then visit the hospital. (5.4/.917)
(c) There is nothing she can do. (1.4/0)
(d) Visit the hospital and ask staff about their condition. (4.8/0)

* 20. The woman who relieves Celia at the end of her shift is twenty minutes late without excuse or apology. *What action would be the most effective for Celia?*
(a) Forget about it unless it happens again. (2.2/.167)
(b) Tell the boss about it. (2.6/.083)
(c) Ask for an explanation of her lateness. (4.6/.583)
(d) Tell her that this is unacceptable. (3.6/.167)

21. Upon entering full-time study, Vincent cannot afford the time or money he used to spend on water-polo training, which he was quite good at. Although he enjoys full-time study, he misses training. *What action would be the most effective for Vincent?*
(a) Concentrate on studying hard, to pass his course. (3.4/0)
(b) See if there is a local league or a less expensive and less time-consuming sport. (5.0/.667)
(c) Think deeply about whether sport or study is more important to him. (3.0/.083)

(d) Find out about sporting scholarships or bursaries. (5.0/.250)

* 22. Evan's housemate cooked food late at night and left a huge mess in the kitchen that Evan discovered at breakfast. *What action would be the most effective for Evan?*
(a) Tell his housemate to clean up the mess. (4.4/.250)
(b) Ask his housemate that this not happen again. (4.6/.583)
(c) Clean up the mess himself. (2.0/0)
(d) Assume that the housemate will clean it later. (3.2/.167)

23. Greg has just gone back to university after a lapse of several years. He is surrounded by younger students who seem very confident about their ability and he is unsure whether he can compete with them. *What action would be the most effective for Greg?*
(a) Focus on his life outside the university. (2.0/0)
(b) Study hard and attend all lectures. (4.8/.250)
(c) Talk to others in his situation. (5.4/.750)
(d) Realize he is better than the younger students as he has more life experience. (2.8/0)

* 24. Gloria's housemates never buy essential non-food items when they are running low, relying on Gloria to buy them, which she resents. They know each other reasonably well, but have not yet discussed financial issues. *What action would be the most effective for Gloria?*
(a) Don't buy the items. (2.0/0)
(b) Introduce a new system for grocery shopping and sharing costs. (5.0/.333)
(c) Tell her housemates she has a problem with this. (4.6/.667)
(d) Hide her own personal store of items from the others. (2.6/0)

25. Shona has not spoken to her nephew for months, whereas when he was younger they were very close. She rings him but he can only talk for five minutes. *What action would be the most effective for Shona?*
(a) Realize that he is growing up and might not want to spend so much time with his family any more. (4.2/0)
(b) Make plans to drop by and visit him in person and have a good chat. (4.0/.250)
(c) Understand that relationships change, but keep calling him from time to time. (4.8/.750)
(d) Be upset about it, but realize there is nothing she can do. (1.4/0)

* 26. Moshe finds out that some members of his social sports team have been saying that he is not a very good player. *What action would be the most effective for Moshe?*
(a) Although he may be bad at sport remember he is good at other things. (4.2/.417)
(b) Forget about it. (3.4/0)
(c) Do some extra training to try and improve. (4.4/.583)
(d) Leave that sports team. (1.6/0)

27. Joel has always dealt with one particular client but on a very complex job his boss gives

the task to a co-worker instead. Joel wonders whether his boss thinks he can't handle the important jobs. *What action would be the most effective for Joel?*
(a) Believe he is performing well and will be given the next complex job. (3.4/0)
(b) Do good work so that he will be given the complex tasks in future. (4.0/.167)
(c) Ask his boss why the co-worker was given the job. (4.2/.750)
(d) Not worry about this unless it happens again. (3.2/.083)

28. Hasina is overseas when she finds out that her father has passed away from an illness he has had for years. *What action would be the most effective for Hasina?*
(a) Contact her close relatives for information and support. (5.6/1.00)
(b) Try not to think about it, going on with her daily life as best she can. (2.00/0)
(c) Feel terrible that she left the country at such a time. (1.4/0)
(d) Think deeply about the more profound meaning of this loss. (4.0/0)

29. Mina and her sister-in-law normally get along quite well, and the sister-in-law regularly baby-sits for her for a small fee. Lately she has also been cleaning away cobwebs, commenting on the mess, which Mina finds insulting. *What action would be the most effective for Mina?*
(a) Tell her sister-in-law these comments upset her. (4.6/.750)
(b) Get a new babysitter. (2.0/0)
(c) Be grateful her house is being cleaned for free. (2.6/.167)
(d) Tell her only to baby-sit, not to clean. (3.0/.083)

* 30. Billy is nervous about acting a scene when there are a lot of very experienced actors in the crowd. *What action would be the most effective for Billy?*
(a) Put things in perspective – it is not the end of the world. (3.4/.250)
(b) Use some acting techniques to clam his nerves. (4.6/.417)
(c) Believe in himself and know it will be fine. (3.6/0)
(d) Practice his scenes more so that he will act well. (5.0/.333)

31. Juno is fairly sure his company is going down and his job is under threat. It is a large company and nothing official has been said. *What action would be the most effective for Juno?*
(a) Find out what is happening and discuss his concerns with his family. (5.0/.750)
(b) Try to keep the company afloat by working harder. (2.0/0)
(c) Start applying for other jobs. (3.8/.250)
(d) Think of these events as an opportunity for a new start. (4.8/0)

32. Mallory moves from a small company to a very large one, where there is little personal contact, which she misses. *What action would be the most effective for Mallory?*
(a) Talk to her workmates, try to create social contacts and make friends. (5.2/.917)
(b) Start looking for a new job so she can leave that environment. (2.2/0)

(c) Just give it time, and things will be okay. (2.8/0)
(d) Concentrate on her outside-work friends and colleagues from previous jobs. (3.0/.083)

33. A demanding client takes up a lot of Jill's time and then asks to speak to Jill's boss about her performance. Although Jill's boss assures her that her performance is fine, Jill feels upset. *What action would be the most effective for Jill?*
(a) Talk to her friends or workmates about it. (3.4/0)
(b) Ignore the incident and move on to her next task. (2.2/0)
(c) Calm down by taking deep breaths or going for a short walk. (3.8/.083)
(d) Think that she has been successful in the past and this client being difficult is not her fault. (4.4/.917)

34. Blair and Flynn usually go to a cafe after the working week and chat about what's going on in the company. After Blair's job is moved to a different section in the company, he stops coming to the cafe. Flynn misses these Friday talks. *What action would be the most effective for Flynn?*
(a) Go to the cafe or socialize with other workers. (3.8/.167)
(b) Don't worry about it, ignore the changes and let Blair be. (2.0/0)
(c) Not talk to Blair again. (1.2/0)
(d) Invite Blair again, maybe rescheduling for another time. (5.2/.833)

* 35. Jerry has had several short-term jobs in the same industry, but is excited about starting a job in a different industry. His father casually remarks that he will probably last six months. *What action would be the most effective for Jerry?*
(a) Tell his father he is completely wrong. (2.4/0)
(b) Prove him wrong by working hard to succeed at the new job. (4.0/.417)
(c) Think of the positives of the new job. (4.6/.083)
(d) Ignore his father's comments. (3.6/.500)

36. Michelle's friend Dara is moving overseas to live with her partner. They have been good friends for many years and Dara is unlikely to come back. *What action would be the most effective for Michelle?*
(a) Forget about Dara. (1.6/0)
(b) Spend time with other friends, keeping herself busy. (3.6/.083)
(c) Think that Dara and her partner will return soon. (1.6/0)
(d) Make sure she keeps in contact through email, phone or letter writing. (5.2/.917)

37. Dorian needs to have some prostate surgery and is quite scared about the process. He has heard that it is quite painful. *What action would be the most effective for Dorian?*
(a) Find out as much as he can about the procedure and focus on calming down. (5.4/.333)
(b) Keep busy in the meantime so he doesn't think about the impending surgery. (3.4/0)
(c) Talk to his family about his concerns. (4.4/0)

(d) Talk to his doctor about what will happen. (5.2/.667)

38. Hannah's access to essential resources has been delayed and her work is way behind schedule. Her progress report makes no mention of the lack of resources. *What action would be the most effective for Hannah?*
(a) Explain the lack of resources to her boss or to management. (5.0/.167)
(b) Learn that she should plan ahead for next time. (3.4/0)
(c) Document the lack of resources in her progress report. (5.2/.833)
(d) Don't worry about it. (1.4/0)

* 39. Jill is given an official warning for entering a restricted area. She was never informed that the area was restricted and will lose her job if she gets two more warnings, which she thinks is unfair. *What action would be the most effective for Jill?*
(a) Think about the unfairness of the situation. (1.6/0)
(b) Accept the warning and be careful not to go in restricted areas from now on. (3.8/.500)
(c) Explain that she didn't know it was restricted. (4.8/.500)
(d) Take a few deep breaths and calm down about it. (3.8/0)

40. Alana has been acting in a high-ranking role for several months. A decision is made that only long-term employees can now act in these roles, and Alana has not been with the company long enough to do so. *What action would be the most effective for Alana?*
(a) Quit that position. (2.4/.083)
(b) Use that experience to get promoted when she is long term. (4.2/.583)
(c) Accept this new rule, but feel hard-done-by. (1.8/0)
(d) Ask management if an exception can be made. (4.8/.333)

* 41. Reece's friend points out that her young children seem to be developing more quickly than Reece's. Reece sees that this is true. *What action would be the most effective for Reece?*
(a) Talk the issue over with another friend. (3.6/0)
(b) Angrily confront her friend about making such statements. (1.8/0)
(c) Realize that children develop at different rates. (4.4/.250)
(d) Talk to a doctor about what the normal rates of development are. (5.0/.750)

* 42. Jumah has been working at a new job part-time while he studies. His shift times for the week are changed at the last minute, without consulting him. *What action would be the most effective for Jumah?*
(a) Refuse to work the new shifts. (1.8/0)
(b) Find out if there is some reasonable explanation for the shift changes. (4.4/.750)
(c) Tell the manager in charge of shifts that he is not happy about it. (3.8/.250)
(d) Grumpily accept the changes and do the shifts. (2.2/0)

43. Jacob is having a large family gathering to celebrate him moving into his new home. He

wants the day to go smoothly and is a little nervous about it. *What action would be the most effective for Jacob?*
(a) Talk to friends or relatives to ease his worries. (3.6/.083)
(b) Try to calm down, perhaps go for a short walk or meditate. (3.8/.083)
(c) Prepare ahead of time so he has everything he needs available. (5.2/.417)
(d) Accept that things aren't going to be perfect but the family will understand. (4.4/.417)

44. Julie hasn't seen Ka for ages and looks forward to their weekend trip away. However, Ka has changed a lot and Julie finds that she is no longer an interesting companion. *What action would be the most effective for Julie?*
(a) Cancel the trip and go home. (2.0/0)
(b) Realize that it is time to give up the friendship and move on. (3.2/0)
(c) Understand that people change, so move on, but remember the good times. (4.6/.917)
(d) Concentrate on her other, more rewarding friendships. (4.4/.08)

APPENDIX B

Full Logistic Regression Model for each Item

ITEM		B	SE	Wald	df	Sig	Exp(B)	95% CI
1	Gender	.169	.240	.497	1	.481	1.185	.740-1.897
	Ext.	-.080	.050	2.546	1	.111	.923	.836-1.018
2	Gender	-.473	.259	3.334	1	.068	.623	.375-1.035
	Ext.	.024	.052	.219	1	.640	.976	.881-1.081
3	Gender	.044	.241	.033	1	.856	1.045	.652-1.675
	Ext.	-.013	.050	.063	1	.801	.987	.895-1.089
4	Gender	-.028	.251	.013	1	.910	.972	.594-1.591
	Ext.	-.016	.052	.093	1	.760	.984	.888-1.091
5	Gender	-.423	.243	3.030	1	.082	.655	.407-1.055
	Ext.	.018	.051	.088	1	.767	1.015	.919-1.121
6	Gender	-.331	.240	1.912	1	.167	.718	.449-1.148
	Ext.	-.006	.050	.014	1	.907	.994	.902-1.096
7	Gender	-.335	.243	1.907	1	.167	.715	.444-1.151
	Ext.	.051	.051	1.013	1	.314	1.052	.993-1.162
8	Gender	-.133	.252	.278	1	.598	.876	.535-1.434
	Ext.	-.131	.055	2.765	1	.171	.877	.788-.977
9	Gender	-.082	.303	.074	1	.786	.921	.508-1.669
	Ext.	-.000	.063	.000	1	.993	1.000	.883-1.132

10	Gender	.133	.331	.162	1	.688	1.142	.597-2.187
	Ext.	-.058	.070	.695	1	.404	.944	.825-1.082
11	Gender	-.599	.333	3.224	1	.073	.550	.286-1.056
	Ext.	-.031	.072	.184	1	.668	.969	.841-1.117
12	Gender	-.654	.257	6.478	1	.011	.520	.314-.868
	Ext.	.034	.054	.401	1	.526	1.035	.931-1.151
13	Gender	-.178	.247	.516	1	.472	.837	.516-1.355
	Ext.	.064	.052	1.519	1	.218	1.066	.963-1.180
14	Gender	-.926	.287	10.432	1	.001	.396	.226-.695
	Ext.	.009	.062	.021	1	.884	.991	.878-1.118
15	Gender	-.458	.272	.2838	1	.092	.633	.371-1.119
	Ext.	.000	.058	.000	1	.999	1.000	.893-1.119
16	Gender	-.97	.375	.067	1	.795	.907	.435-1.891
	Ext.	.037	.178	.220	1	.639	1.037	.890-1.210
17	Gender	.106	.246	.186	1	.607	1.112	.686-1.801
	Ext.	-.034	.031	.433	1	.510	.967	.875-1.069
18	Gender	.499	.267	3.484	1	.062	1.647	.973-2.783
	Ext.	-.031	.056	.293	1	.588	.970	.869-1.083
19	Gender	-1.013	.352	8.271	1	.004	.363	.182-.724
	Ext.	.026	.074	.124	1	.765	1.026	.887-1.187
20	Gender	-.313	.240	1.708	1	.191	.731	.457-1.169

	Ext.	-.022	.050	.188	1	.665	.979	.887-1.079
21	Gender	-.145	.243	.355	1	.551	.865	.537-1.393
	Ext.	.079	.051	2.411	1	.120	1.082	.979-1.196
22	Gender	-.308	.271	1.287	1	.251	.735	.432-1.251
	Ext.	-.060	.058	1.042	1	.307	.942	.840-1.056
23	Gender	-.370	.240	2.381	1	.123	.691	.432-1.105
	Ext.	-.007	-.056	.020	1	.889	.993	.901-1.695
24	Gender	-.071	.329	.046	1	.830	.932	.489-1.776
	Ext.	.003	.069	.002	1	.968	1.003	.877-1.147
25	Gender	-.317	.332	2.164	1	.141	.596	.299-1.167
	Ext.	.007	.075	.010	1	.920	1.008	.870-1.167
26	Gender	-.224	.230	.800	1	.371	.800	.490-1.305
	Ext.	-.075	.052	2.025	1	.155	1.077	.972-1.194
27	Gender	.054	.257	.043	1	.835	1.055	.637-1.747
	Ext.	-.041	.053	.606	1	.436	.960	.865-1.065
28	Gender	.152	.250	.371	1	.543	1.164	.713-1.901
	Ext.	-.045	.052	.740	1	.390	.956	.864-1.059
29	Gender	.116	.259	.199	1	.655	1.123	.676-1.865
	Ext.	.068	.053	1.671	1	.196	1.071	.965-1.188
30	Gender	-.790	.394	4.012	1	.045	.454	.210-.983
	Ext.	-.057	.087	.438	1	.508	.944	.797-1.119

VITA

Michael James Hartman was born in Charlotte, North Carolina on January 14, 1985. He grew up in Round Rock, Texas and graduated from Round Rock High School in 2003. He earned a Bachelor of Science in Psychology from Texas State University in 2008, and a Master of Science in Industrial-Organizational Psychology from Angelo State University in May, 2011. During Michael's time at Angelo State University, he was the Vice President of Psi Chi and a member of SIOP – the Society for Industrial-Organizational Psychology. Michael has experience working at Angelo State as a research assistant and a teaching assistant.